DOCUMENT RESUME

ED 059 947 SO 002 611

AUTHOR Lundgren, Laurie L.
TITLE A "Save Our Trees" Project for Primary Grades.
INSTITUTION Western Washington State Coll., Bellingham. Huxley Coll. of Environmental Studies.
SPONS AGENCY Office of Education (DHEW), Washington, D.C.
BUREAU NO BR-0-0848
PUB DATE Oct 71
GRANT OEG-0-70-5039
NOTE 49p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Activity Learning; Community Action; Concept Teaching; *Conservation Education; Ecology; Elementary Grades; *Environmental Education; Environmental Influences; Forestry; *Interdisciplinary Approach; Junior High Schools; Natural Resources; Outdoor Education; Pollution; Program Descriptions; *Recycling; School Community Programs; Secondary Grades
IDENTIFIERS *Ecosystems; Sedro Woolley Project

ABSTRACT

This idea-generating description of a successful class project tells how second grade students, through viewing a film on ecology were motivated toward involving teachers, schools, parents and community in a cooperative effort to collect used paper for recycling. Objectives of the project were to: 1) enable students to identify environmental concepts; 2) activate pupils toward solving environmental problems; 3) encourage pupils in discovering the causes of environmental problems; 4) develop ways, means, and materials for incorporating environmental education into existing curriculum; and, 5) involve the adult community in treating environmental problems. Activity learning, in which students had primary responsibility for performing daily and weekly tasks, was combined with a multidisciplinary approach relating the project to the total curriculum. Money earned was to go toward an arboretum at the school. It was concluded that decisions need to be made as to the integration, scope, and sequence of environmental education in the existing curriculum. It is requested that users of the report share their results with the project staff. Follow-up activities include continuation of paper recycling and the possible start of a center for recycling bottles and cans. SO 002 612 is a related report. (Author/SJM)

ED 059947

HUXLEY COLLEGE
CENTER FOR ENVIRONMENTAL EDUCATION

A "SAVE OUR TREES" PROJECT

for primary grades

Laurie L. Lundgren

SP002 611

Sedro-Woolley Project Report No. 1
October 1971
U.S.O.E. Project No. 0-0848
Grant No. OEG-0-70-5039

Huxley College of Environmental Studies
A Division of Western Washington State College
Bellingham, Washington 98225

The research reported herein was performed pursuant to a grant with the U.S. Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

HUXLEY COLLEGE
Environmental Education Project

A "SAVE OUR TREES" PROJECT

For primary grades

Laurie L. Lundgren
Huxley Center for Environmental Education
Sedro-Woolley Project Report #1
U.S.O.E. Project No. 0-0848
Grant No. OEG-0-70-5039

TO THE TEACHER:

Presented here are ideas for multidisciplinary environmental education. The objectives of the ideas and methods suggested are clearly stated. The overall objective is to provide you, the teacher, with an aid in the development of your approach to teaching for and about the environment. These are not learning packages designed to be applied verbatim, but suggestions for ideas and methods that will enable you to develop learning packages. The contents of this report represent only the first treatment of the idea. It is published in this form in order that teachers may have an opportunity to experiment with it.

You will have to design your personal approach to environmental education. You are an environmental educator now, whether you realize it or not, because the environment is all around you and you are teaching about the environment that surrounds both you and your students. The state of the environment indicates that there is something wrong with the way in which you have learned to perceive and behave relative to the environment, and with the way you are teaching others to learn and behave in their environment today.

The ideas presented here are examples of ways in which you can incorporate environmentally beneficial learnings into your curriculum. The intent is not that you "add on" something specifically environmental to your curriculum, but that you incorporate environmental learnings into your treatments of the subject matter with which you have already been dealing. The specific manner in which you treat your responsibility to

educate for environmental stewardship is up to you. It is hoped that these and many other ideas will help you in your effort to understand the meaning of "environmental education" and its implications for you as a teacher and as a human organism.

The environmental education development project of which this report is a part is an ongoing one, and it is hoped that all who attempt to use the report will participate in the project by reporting the results of their efforts to the project staff. The staff will compile the ideas and methods collected. This will enable all working on the development of environmental education to share each other's work and will promote the spirit of cooperation essential to the success of any project as broad as this one.

Please report the methods and results derived from your use of this report to:

John Miles, Director
Environmental Education Project
Huxley College of Environmental Studies
Bellingham, Washington 98225

Thank you.

TABLE OF CONTENTS

TO THE TEACHER i

INTRODUCTION 1

PROJECT OBJECTIVES 2

DAILY STEPS OF PROJECT 3

WEEKLY STEPS OF PROJECT 4

STUDENT INVOLVEMENT 6

STAFF INVOLVEMENT 10

COMMUNITY INVOLVEMENT 12

PROJECT FOLLOW-UP POSSIBILITIES 14

BIBLIOGRAPHY 17

APPENDIX 19

A "SAVE OUR TREES" PROJECT

INTRODUCTION

During the study of our community in second grade social studies we viewed the film Our Land Needs Your Help. Pre-viewing discussion related to the implied meaning of the film title and post-film discussion provided the germ of a specific idea that swelled to a gigantic cooperative project involving virtually all staff and students within the school and including substantial parental and community involvement.

In the film, children were helping their community by collecting used papers for recycling. In the process of cleaning up their community the children also realized they were helping the larger environment by saving trees from premature and unnecessary use. The film pointed out that 120 pounds of paper gathered for recycling amounts to the equivalent of paper produced from an average pulp tree.

It became apparent, as post-film discussion developed, that here was an ideal point of departure for really getting involved in environmental learning. During the follow-up discussion it was decided, largely at the instigation of the children, that the class should start a club to gather paper. One child suggested that more paper could be gathered, and thus more trees conserved, if more rooms were involved in the project. The class decided we should also have a club membership chart. The "dues" for the club would be 120 pounds of paper. Upon becoming a member, the child would receive an "I Saved a Tree" badge. The children departed that day full of enthusiasm and ready to start paper collecting routes.

At the next staff meeting an outline of the project, as far as it had evolved, was presented. Some teachers appeared at first reluctant to become involved. They conceded that after viewing the film they might become more enthusiastic. The film was re-ordered and within two weeks all nineteen rooms in the school were involved in the project. After the first child had brought 120 pounds of paper, it was taken to other rooms by various children to show how much 120 pounds was and to tell other classes more about the project.

PROJECT OBJECTIVES

1. To enable students to identify the following environmental concepts:
   a. The value of maintaining a balanced use of renewable resources.
   b. The fact that man plays the major role in determining the fate of his environment.
   c. Identification of the recyclability of much of what we previously considered to be "garbage."
   d. The realization that the rate of population growth in part determines the rate of resource depletion.
2. To construct ways in which each child can become personally involved in active solution to an environmental problem such as land, water, or air pollution, or resource wastage.
3. To construct ways in which each child, through active involvement and investigation, can learn the causes of specific environmental problems.
4. To develop ways, means, and materials for incorporating environmental education into the existing curriculum.

5. To involve members of the adult community in learning of environmental problems through participation in problem solving with their children.

DAILY STEPS OF PROJECT

1. Gathering and Bringing Paper to School

The children collected their own paper, at home or from friends and relatives, and in other places throughout the community. In this part of the process the children learned that:

a. Some kinds of garbage can be collected and re-used.

b. Re-use of a resource prolongs the availability of that resource.

c. Cooperation with family or other people is needed to gather, bundle, and transport paper to school.

2. Weighing Paper

Central weigh-in and storage places were arranged, necessitating learning about:

a. The need to cooperate in sharing scale usage.

b. The desirability of teamwork in stacking paper neatly in a storage area.

c. The reading of balance scales.

d. The responsibility of independently making sure his paper was weighed and stacked.

3. Recording Paper Weight

Weight of paper was recorded daily on "total pounds" charts. Various mathematical skills were learned or reinforced in making charts and recording poundage.

4. Awarding Badges

Awarding of badges illustrated that effort in protecting one's environment could bring simple material awards, but beyond that, feelings of satisfaction and accomplishment.

5. Taking the Total School Count

Each day one child from the project-initiating class went to each room to gather data on the poundage for that room, returning to complete totals for the school.

6. Raising a Total Poundage Thermometer

Total poundage for the school was recorded on bar graph "thermometers" in the main hallway. Each thermometer had a 7,000-pound top, which was the approximate weight carried by one truck to the recycling plant.

7. Bundling Paper

The children bundled any loose paper brought and stacked in the storage area. The children learned that paper stacking took the cooperation of the entire school. First, the paper had to be stacked and bundled neatly; then the paper was transported to the storage area in carts and wagons. The children were eager to help each other with the transporting and stacking.

WEEKLY STEPS OF PROJECT

After viewing the recycling process in the aforementioned film, the children discussed different locations of paper mills in relation to other geographical-resource areas, such as water and forest. It was decided that the Georgia-Pacific Pulp and Paper Mill in Bellingham, Washington, would

be the best depository for the paper.

The children were not able to tour Georgia-Pacific since there is an age restriction for tours of twelve years and older. During the time period of the project, the paper making and recycling process was studied through films, pictures, and books.

Appointments were made with Georgia-Pacific for bringing the paper to their recycling plant. (About once a week a school district truck was taken to Bellingham with 7,000 to 8,000 pounds of paper. For weekly weight tabulations, see appendix.)

1. Loading the Truck

Two classrooms of children helped load the truck, along with high school aides, teachers, and the building principal. After the truck was loaded, the children accepted the responsibility of cleaning up the storage area. They especially seemed to enjoy being able to use the custodian's big mops and brooms.

After the first loading of the truck, the class discussed ways in which the process of loading could be improved. They concluded that it was fun to run from room to room, gathering paper, but that it was probably disturbing to other classes. The children were also concerned with the ton-and-a-half of paper which they had stored in their room. Having the paper there took away all of their free area. It was then that one of the children asked the principal if he would establish a central storage area, which he did. In addition to centralizing this aspect of the project, the students redesigned the loading process, cutting loading time from two hours

to thirty minutes, thus illustrating another important learning spin-off from the project.

STUDENT INVOLVEMENT

1. Mathematics

   a. Reading scales. Each child learned to read both bathroom-type spring scales and balance, or springless, scales, and in the process learned some of the basic principles upon which the function of such scales is based.

   b. Addition-Division-Multiplication. Each child maintained a running total of his own poundage. Each day a different child gathered poundage from the various classrooms, and learned to transpose numbers from verbal to written form. In compiling school-wide totals, the children gained practical experience in using 5- to 6-digit numbers. Further, children developed and used a formula for determining the number of average pulp trees saved for future use.

$$\frac{\text{total weight of collected paper}}{\text{number of pounds of paper (120) produced from average pulp tree}} = \text{number of trees represented}$$

   c. Thermometers. In the main hall of the school, paper thermometers were hung to maintain a constantly changing record of paper poundage. Each thermometer recorded 7,000 pounds, the approximate weight of a truckload of paper. After the preliminary thermometers were made, and during the latter stages of a measurement unit in math, the children learned to make the paper thermometers. By using yardsticks and measuring tapes, the children not only became acquainted with additional instruments of measure but also with how to construct a measuring instrument of their own--the thermometer. They learned the function of these instruments through practical application to real problems with which they had to deal.

2. Language Arts

   a. Creative writing. Since early in fall quarter the class used natural things in our environment as subjects for their writing. The first experience at composing stories proved painful for some children, bringing tears to the eyes of two. They had not previously been exposed to composition, but rather were used to copying or summarizing other stories. Before writing additional stories, discussions were held emphasizing the nearness of nature's wonders, even in the city schoolyard. One particularly stormy Northwest day, the weather was observed beyond the classroom. The two children that experi-

enced frustration on their initial writing attempt were taken outside, where they looked closely at raindrops, rocks, grass, and the trunks of trees with moss and lichens. Upon returning to the room these children appeared all smiles and very eager to write their own stories.

At present the children exhibit a quite sophisticated feeling for relationships within the environment. Due to the paper project, trees seem to be the major focal point for their writing. (See appendix for samples.)

b. Letter writing. As the project evolved, many questions arose within the class about the recycling of paper and other resources. Examples are: How is the printing ink removed from the paper? What kinds of paper are produced in the recycling process? Why haven't more people done things to conserve resources?

Inasmuch as the children were too young to tour Georgia-Pacific, the next best thing available was to write, seeking answers to their questions. (See appendix for samples and reply.)

3. Music

As a motivational device--and for pure pleasure--one of the teachers who became involved in the project wrote the song "The Paper Packers of Mary Purcell." (See appendix.)

4. Art

On many occasions we used trees for our subject for an art lesson. We went for walks before we started the actual art project, and on these walks we touched trees, looked closely at them, and compared them with each other. The children observed the following:

Trees are thin and fat.
Trees are tall and short.
Trees are straight and twisted.
Trees are rough and smooth.
Trees have many different shapes of leaves and needles.

The knowledge the children acquired on these walks was incorporated into art lessons. The art lessons helped to develop an

awareness of differences and similarities. The children were able to interpret and express their new-found ideas through their art.

5. Science

The instructor incorporated the study of trees in the area of science through the process of inquiry. Samples of questions are:

a. What is a tree? (Through inquiry develop the concept that there are three parts to the tree--the crown, trunk, and roots.)

b. How are trees like humans?

c. How does a tree leaf benefit man; how does the tree itself?

d. How do trees use water?

e. What different plants do we have in the schoolyard? Which are evergreen, deciduous, conifers, broadleaves? (Have the class develop their own classification key to trees and plants.)

f. Why do some leaves change color in the fall?

g. How do soil temperatures affect plant growth in the forest?

h. Is soil living or dead? Examine a piece of soil. Do living organisms live in the soil?

i. How do soils differ?

j. How do trees help living things?

k. How can you tell how old a tree is?

l. What things are made from various trees?

Several of the rooms in our school took field trips to the State Forest to plant trees. By doing this they were able to actually take a personal part in maintaining and restoring our forests. Field trip arrangements were made through Dale Thompson, Washington State Department of Natural Resources, Sedro-Woolley.

In science, the children have been able, with increasing confidence, to transfer the paper-tree relationship to other resources. One such example: the amount of bauxite ore (approximately 4 pounds) and alumian (approximately 2 pounds) needed to finally produce 1 pound of aluminum.

6. Social Studies

Inasmuch as social studies encompass all aspects of the study of man, this project and its topic has served primarily as a foundation upon which to build an elementary examination of the attitudes and values of men with respect to their environment.

In studying communications, the primitive and modern methods of paper making were compared in relation to technological advancements and to the needs and wants of man during those different eras.

Paper can be made in the classroom. (See appendix.)

After studying how paper relates to our environment, most of the children in the class seemed to be more conservative with their usage of paper. I often heard one child telling another to save his paper and use the back side.

We have always had a scrap box for art but its use really increased since this project began. The children were very careful to use the recycling box instead of the waste can for any paper that is unusable. Different children took the responsibility for checking the waste can for recyclable material.

In summarizing the children's involvement, I feel that at the present time the environmental aspects of elementary education cross the entire

spectrum of subject areas. This fact is seen as both gratifying and frustrating. To the extent that decisions need yet to be made concerning the scope, sequence, and integration of environmental education into the existing curriculum (or the ought-to-be), the project has proven frustrating. It has proven very gratifying, however, when we consider the multidisciplinary approaches that can provide so many opportunities for giving the generation now in school a much greater desire to live with the environment of which they are a critical part, rather than simply to use it.

STAFF INVOLVEMENT

1. Each teacher was involved by helping his class weight in, by giving out badges, and by helping to maintain room paper poundage count.

2. Several staff members not involved in the Institute have gone on to start development of more environmentally oriented learning experiences. The teacher who wrote "The Paper Packer Song" is one of these.

3. Field Trips to State Forests

   It is hoped that increasing numbers of classes will become involved in this kind of project. The Forest Service personnel do an excellent job of explaining their reforestation process to young children. The Mary Purcell children got involved in planting trees, which will aid in preparing them for participation in the school beautification project this fall.

4. As the project developed and some staff members became aware that the project would result in monetary returns, there were a few who

went directly to the principal, requesting expenditure of the potential funds for various items for their individual classrooms.

The children did not realize until late in the project that money was involved; they recognized that their purpose in the project went beyond remunerative rationale.

As more and more staff discussions concerned the question of what to do with the money, a decision had to be made. The day of the meeting, the project-originating class discussed different ways the money could be used. Among those ways mentioned were:

a. To plant trees somewhere.
b. To carpet part of the school.
c. To buy paintings for the school.
d. To buy games.
e. To buy environmentally oriented books for the library.

Seven staff members met to discuss the children's ideas and other possibilities, and decided to incorporate several of the classes' ideas into one. Inasmuch as several of the ideas of the children were aimed at improving the school environment, it was decided that the funds derived from the project would be used to develop an arboretum around the school yard. Each classroom would be given a certain area for designing and carrying out landscaping improvements. This phase of the project was to be carried out in cooperation with school district grounds keepers and community landscape persons. Thus another area of environmental learning could be developed.

COMMUNITY INVOLVEMENT

1. Parents have been involved throughout the project by helping to collect the paper and transport it to school.

2. Citizens who do not have children in school called the school to have someone pick up their paper.

3. Chamber of Commerce

On May 25, 1971, four children from the project-originating class went downtown to talk to Bus Junquist, President of the Chamber of Commerce. The prime objective of this visit was to attempt to get the community more involved in environmental responsibility through the establishment of a recyclable can and bottle pickup center. Mr. Junquist had newspaper articles and some pamphlets from different recycling places to share with the children. The children wanted a community area to deposit cans and bottles. Funds earned from this project would go into a general community beautification project. One child had a project suggestion all lined up: he felt the roadside Lions' Park should be renewed with plants and trees.

Mr. Junquist pointed out that for aluminum recycling, both children and adults would have to be able to identify aluminum. He pointed out that aluminum cans are non-magnetic--a magnet will not stick to their sides. All-aluminum cans "crinkle" easily in the hand. All-aluminum cans do not have a side seam, and are rounded and indented.

The Reynolds Aluminum Can Recycling Plant, in addition to paying for empty all-aluminum cans, will also pay for aluminum frozen-

dinner trays and containers, aluminum margarine tubs, and aluminum cans which held dips, meat products, puddings, custards, and other snacks.

Since at this point the school year was almost at a close, the group of children felt it would be better to start full-swing with this project the following fall. Mr. Junquist suggested that after we had things planned out, we might have Bob Cockburn from the local newspaper take pictures and do a write-up about the new project proposal with the end result to be beautification for Sedro-Woolley.

Mr. Junquist volunteered his truck for transporting cans, etc. He mentioned that he was sure there were other businessmen who would be happy to donate trucks to help with transportation. He had looked into the locations of the different recycling plants and had found the one in Burlington to be closest.

4. Mr. Bob Cockburn, the local newspaper photographer, was involved by taking pictures of our project.

5. Resource People

Many resource people were used throughout this project. The following were contacted for different stages of the project.

Mr. Warren Mowry
Recycling Department
Georgia-Pacific
P.O. Box 1236
Bellingham, Washington 98225

Mr. Ed Dahlgren
Technical Director
Georgia-Pacific
P.O. Box 1236
Bellingham, Washington 98225

Mr. Leonard Carlson
Sedro-Woolley Greenhouse
409 Reed Street
Sedro-Woolley, Washington 98284

Mr. Dale Thompson
Washington State Department of Natural Resources
Route 4, Box 17
Sedro-Woolley, Washington 98284

Mr. William Rivord (for plant life slides)
504 Talcott Street
Sedro-Woolley, Washington 98284

Mr. James Evans
Northern State Hospital Greenhouse Supervisor
Northern State Hospital
Sedro-Woolley, Washington 98284

Mr. B. D. Dupris
City Park Department
North Metcalf
Sedro-Woolley, Washington 98284

Mr. Jerry Sommerseth
Environmentalist
Sedro-Woolley High School
Sedro-Woolley, Washington 98284

Mr. Richard Allen
Forester's Office
Scott Paper Company
Hamilton, Washington 98255

Mr. Bill Franz
Forester's Office
Scott Paper Company
Hamilton, Washington 98255

PROJECT FOLLOW-UP POSSIBILITIES

There are several important experiences under consideration at this time. The first follow-up activity next fall will be the application of the money derived from this project to the development of an around-the-

school arboretum, and will include correlated learning activities. Some of these correlated activities may include learning more about diversified types of trees, flowers, soils, and fertilizers, as well as planning, planting, and maintenance.

A continuation and extension of the paper recycling project holds much promise. It is hoped that the current project will be maintained annually, at least within this school, and perhaps extended throughout the school district. It is also hoped that the preliminary groundwork laid with the Chamber of Commerce for a community bottle and can deposit center will bear fruit.

Basic to all the above ideas is the fundamental purpose of the Sedro-Woolley Environmental Education Project, which means that the major effort for 1971-1972 will be the development of better ways and means for incorporating a broader environmental education spectrum into the primary grades curriculum.

BIBLIOGRAPHY

TEACHERS' REFERENCES

Books

Adams, Claude W. History of Papermaking in the Pacific Northwest. Binfords and Mort, 1951.

Conklin, Edwin, and Conklin, P. A Saga of Pulp and Paper Making. The American Historical Co., Inc., 1958.

Grant, Julius. Cellulose Pulp. Interscience Publishers, Inc., New York, 1959.

Guilcher, J. M. A Tree Is Born. Sterling Publishing Co., Inc., New York, 1960.

Hunter, Dard. Paper-Making, the History and Technique of an Ancient Craft. Alfred A. Knopf, New York, 1947.

Ketchum, Richard M. The Secret Life of the Forest. American Heritage Press, New York, 1970.

Pamphlets

"Conservation Tools for Education," U. S. Department of Agriculture Forest Service, Pacific Northwest Region.

"Paper, People and Pollution," Scott Paper Company, Philadelphia, Pennsylvania, 1971.

"The Life of the Forest," St. Regis Paper Company, Tacoma, Washington.

"The Story of Pulp and Paper," American Forest Products Industries, Inc., Washington, D.C., 1960.

"The True Story of Smokey Bear," U.S. Department of Agriculture Forest Service.

"Trees of Washington," Extension Bulletin No. 440, U.S. Department of Agriculture, March, 1970.

CHILDREN'S BOOKS

Cooke, David C. How Paper Is Made. Dodd, Mead & Co., New York, 1959.

Eberle, Irmengarde. The New World of Paper. Dodd, Mead & Co., New York, 1969.

Lent, Henry B. From Trees to Paper - The Story of Newsprint. Macmillan Co., New York, 1952.

Perry, Josephine. The Paper Industry. Longmans, Green and Co., 1946.

Pryor, William C., and Pryor, Helen S. The Paper Book. Harcourt, Brace and Co., New York, 1936.

FILMS

"Our Land Needs Your Help," Arthur Barr Productions, Inc., P.O. Box 7-C, Pasadena, California 91104 (color, 13 minutes).

"The Tree," Churchill Films, Inc. (color, 10 minutes).

"What Is a Tree?" ACI Films, Inc., New York, New York (color, 7 minutes).

APPENDIX

Instruction sheet for making paper
Children's letters of inquiry and response
Children's stories
"The Paper Packer's Song"
Tabulation of weight receipts from Georgia-Pacific

How To Make Paper In the Classroom

1. Bring clean scraps of white linen to school. Cut these into little pieces about one-half inch square. Pull the threads apart. Cut the threads into very tiny bits. You will need nearly a quart of these tiny threads. (Let children help.)

2. Dissolve a stick of caustic soda (lye may also be used) in six quarts of water. Caution: caustic soda is poisonous. It must be handled carefully.

3. Stir the tiny threads into the water and caustic soda.

4. Boil the tiny threads in the water and caustic soda for about eight hours.

5. Rinse the rags thoroughly in three waters. Pour the mixture into a colander.

6. If you want the paper tinted put the pulp in water which has dye in it. Then rinse the pulp after dyeing it.

7. In a large pan mix six quarts of water, eight tablespoonsful of starch, four of liquid glue, and one of blueing.

8. Put the pulp into this mixture and stir it with a paddle or stick.

9. Dip the mold into the liquid. Lift it out carefully and let the water drain back into the pan. (A small mold is best for classroom use.)

10. Turn the thin layer of pulp out of the mold onto a piece of felt. Put another piece of felt on top of the layer of pulp. Run them through a wringer if possible to squeeze all the water out.

11. Put the layer of paper on a piece of cloth (cheesecloth is good) with another layer of cloth over it, and iron with a hot iron until it is quite dry.

12. If you want a smooth finish, take away the cloth and iron the paper entirely dry.

In order to be able to write on the paper with ink, a sizing must be applied to the sheets of paper. It may be brushed on, or the sheets may be dipped. To make the sizing, dissolve a package of gelatin according to the package directions. To a pint of the dissolved gelatin add one-half ounce of alum as a hardener.

An easy method of making paper in the classroom is done with pulp obtained from a pulp mill. Samples of bleached and unbleached wood pulp, processed and ready to use, can be secured from the various mills in our state. Some mills will help you by supplying information and material to aid you in your unit.

may 13 197

Dear sir,

I want to know how you make the ink disappear on the paper. Do you soak the paper in a detergent or something. Does it make the water smell like pollution. Maybe you can send a letter back soon by.

Sincerely, Carol thompson
mary purcell school room 11
Sedro woolley, Washington 98284.

MAY 13.th 1971

Dear Sir,

I would like to know how you get the inkoff of the paper.
And how you change the wood into paper.

Sincerelyyours
Heidi Jordan
Mary Purcell
Room#11
Sedro Woolley
Washtion 98284

May 12th 1971

Dear Sir,

. How do you recycle paper? How do you get the inK off the paper? How do your machines worK? How do weigh the truck? How do you get the paper white?

Sincerely, Belinda Brown

Mary purcell School Room 11

Sedro-wolley washington 98284

May 13 1971

Dear Sir;

When you wash the pulp does it pollute the water at all? How do you get the ink off the paper? We would like to know when you put in the paper in the machine and how you do it? When do you usually get a broken down machine? We would like to know if you would like to take some pictures of the factory for our class and send them back to us.

Sincerely yours Don Torset
Amy Martindale
EDWARD

Mary Purcell School
Room 11
Sedro Woolley Wash. 98284

GEORGIA-PACIFIC
CORPORATION

P.O. BOX 1236 • BELLINGHAM, WASHINGTON 98225 • 206-733-4410

May 18, 1971

Mrs. L. Lundgren's Class
Room 11
Mary Purcell School
Seventh and Bennett
Sedro Woolley, Washington 98284

Dear Students:

I am writing this letter to answer each of the questions asked in your letters about making pulp and paper and recycling paper to make more paper.

We make pulp here in Bellingham from logs by first removing the bark from the log. We burn the bark in our boilers to make steam. The logs are made into small wood chips, which are cooked with a special liquor we make from limerock and sulphur. The pulp is bleached to a white color using several chemicals, including the same chemical that is in Purex or Chlorax, used to bleach clothes in your mothers' washing machine.

When we finish bleaching the pulp, we dry it and press it into bales about 3 feet by 3 feet and one foot high. We ship the bales of pulp in rail cars to the Eastern United States and by ship to other countries.

I am enclosing a sheet of pulp for each of you to see.

We also make tissue paper and paper towels from the pulp here in Bellingham. The pulp is mixed with water and spread in a thin sheet before drying on steel rolls.

To make boxes for the tissue and the cores in the middle of the tissue and paper towel rolls, we use waste newspaper collected from Whatcom and Skagit Counties. Over 50 groups, such as boy scouts and campfire girls, collect the paper and sell it to the pulp mill. I have also enclosed a copy of a newspaper advertisement with additional information on pollution control and recycling paper.

Mrs. L. Lundgren's Class
Page Two
May 18, 1971

The paper must be delivered, and people bring it in trucks with from 500 pounds to 5 tons of waste paper, magazines, and cardboard boxes. The trucks are weighed on a big scale before and after the waste paper is unloaded.

Ink can be removed from waste paper by heating it in a chemical solution. After de-inking the paper, the solution must be treated very carefully to prevent pollution. To make the paper whiter, it can be bleached, just like pulp is bleached.

We offer tours of our pulp and paper mill here in Bellingham for students 12 years of age and older. We can arrange class tours during school days throughout the school year. We also offer tours for visitors during the summer months, June, July, August and September at 2:00 each afternoon.

I hope this information has answered each of your questions and that you will have an opportunity to visit our pulp and paper mills here in Bellingham.

Sincerely,

E. Dahlgren

Ed Dahlgren
Technical Director

bjm
Enc.

The Ocean

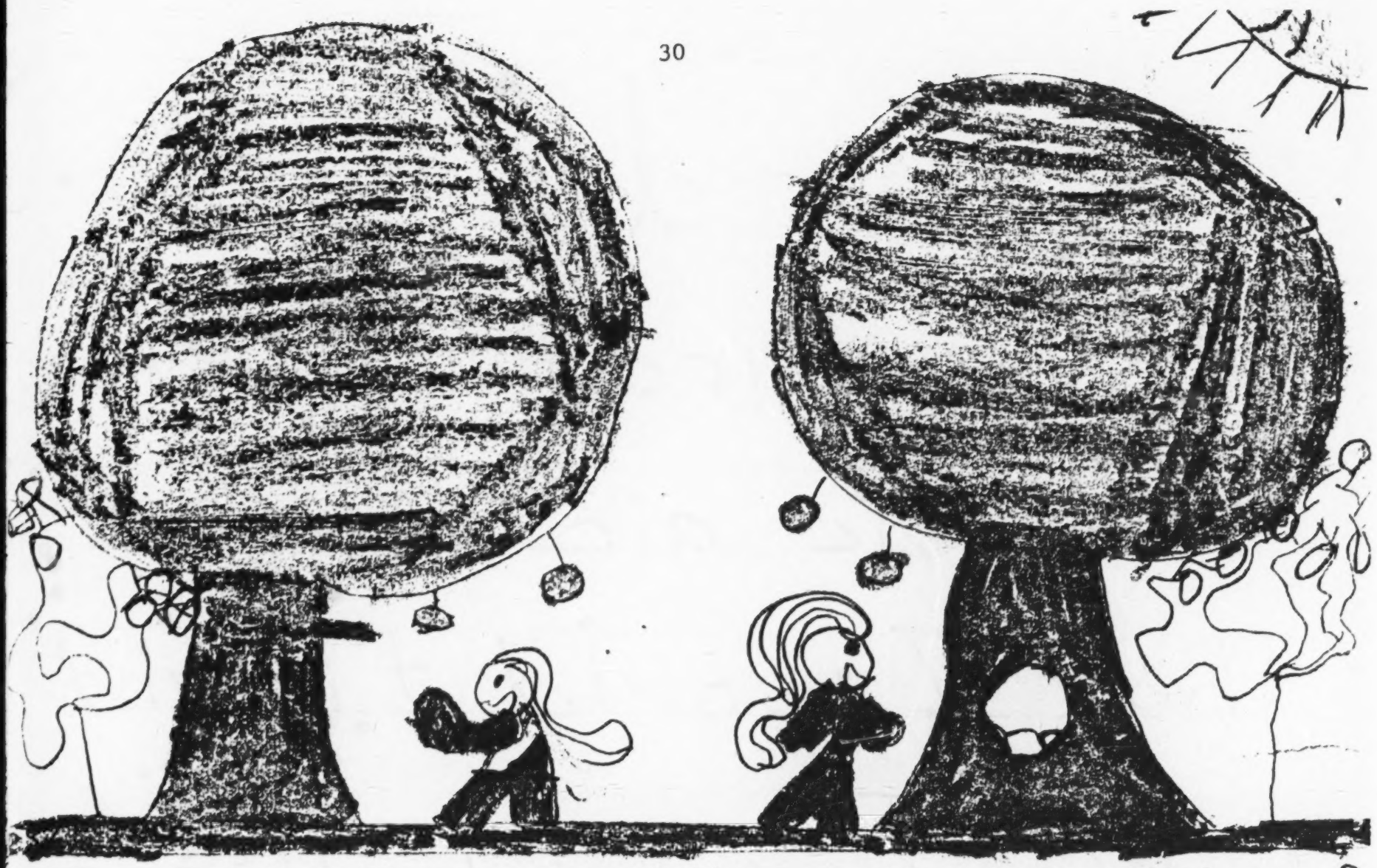
The Ocean is a nocean
that you will neverforget
Because I like to jump
and bump against the ocean
floor. And I see trout and
evermore. Andsting-rays a snoan.
And it had to be me to see
a shark. the shark said hark
And then he said Oh Joy
oh Joy I hear a boy.

Donald

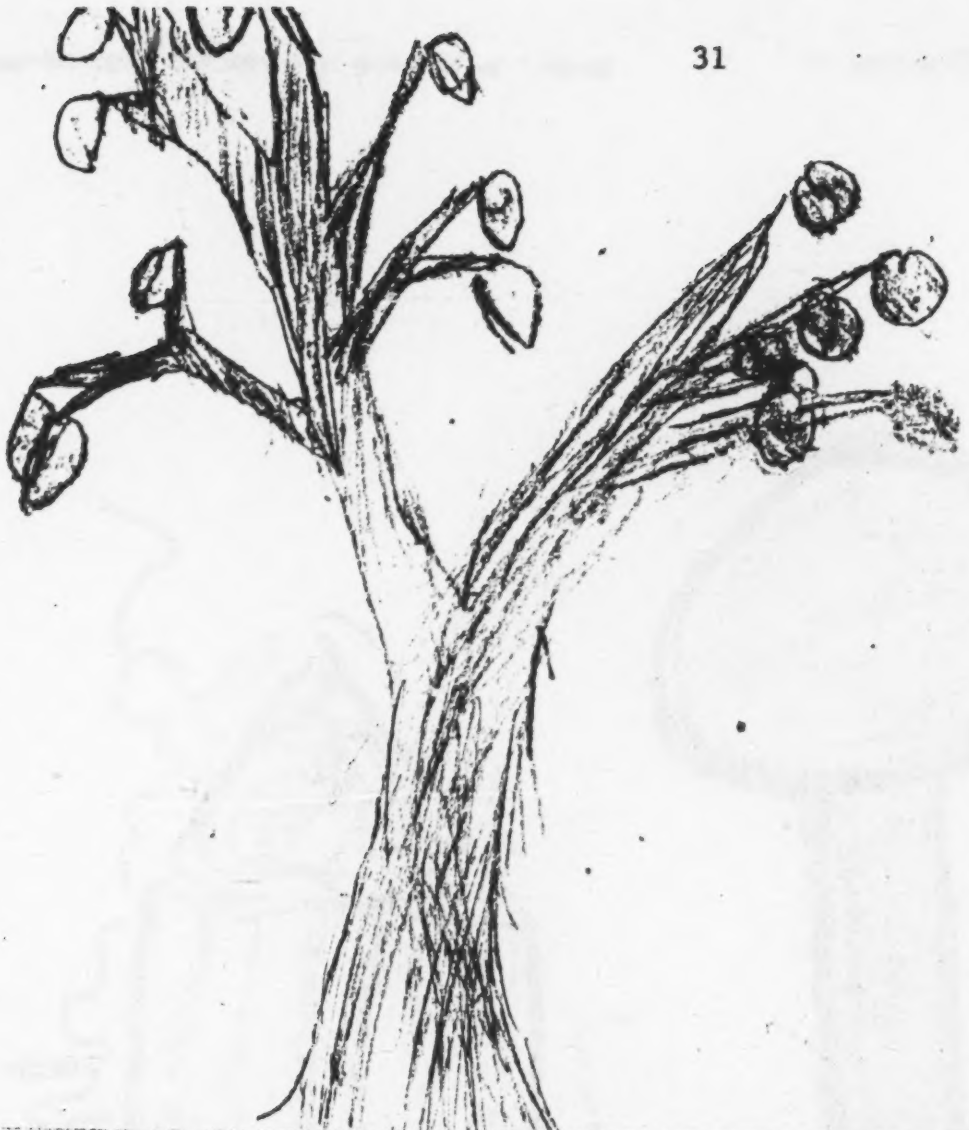
Birds

The birds wistle throw the air. I wish that I could fly and hear. I would like to sing and hear and jump and wistle throw the air. and spring and wing throw the air.

As if I were a bird



Trees are one of the importent things of all. Paper can save trees. Trees have losts of levaes on them too.
Trees can make lots of things like houses and barns and lots of other things too.
Scolels use the trees too. Some of the trees have grass on them too. You could climed the trees too. There are trees with nuts on them too.
Diane The End



HOW To Graft a thee

First you Find two theer
That are different then
where a branch comes to Part
on one tree cut it off in a V. shape
Then on the other Tree Do the same
thing. Now take one Branch
and stick it in the other Tree V.
now take some string and wrap it
around the V. Then take some wax
and pour it over it. The End

Eric

Trees have bark and sometimes they have smooth bark and they have rut bark ~~tb~~ But there are all kines of trees to see in the world. But there is one I like and that is the apple tree do you know why I like apples trees because you can pich them off of a tree and eat them and I like apples because they are so jusey and very red and I like apples very very much.

TODD. Skiles.

I am a tree and I'll tell you how I feel about life. I feel proud when bird make their nest in my branches. But I feel very sad when my freinds are cut down to be made into paper or lumber

THE END

by Patricia wentz

~~The Wind~~
Sounds

The sea is a sound and
so is the wind, so is the tree
that looks so sad it hangs
over but that does not
matter it just lets the
wind blow threw it. It
does not ~~have~~ a care for
the wind, but I do.
the sea makes a noise
that sounds so strange it
does not care, but I do.
I ~~does~~ no don't think
that the wind is so great
but it does help you
~~breathe~~ breath good

T. 6½
B. "
S. 9½
W. "

Amy

A fruit tree is good for eating.
And it gives lot's of kind of fruit
It gives apple's and pear's and
other thing's lik that. there
is many kinds of fruit trees

Ben Houghton

The Wind

The wind blows almost every day at our house and then we can't go outside and play and it's to cold to go outside to play or else you will Get a cold you can not see the wind but you can hear it.

The end

Cheryl Colwill Trees are all M-

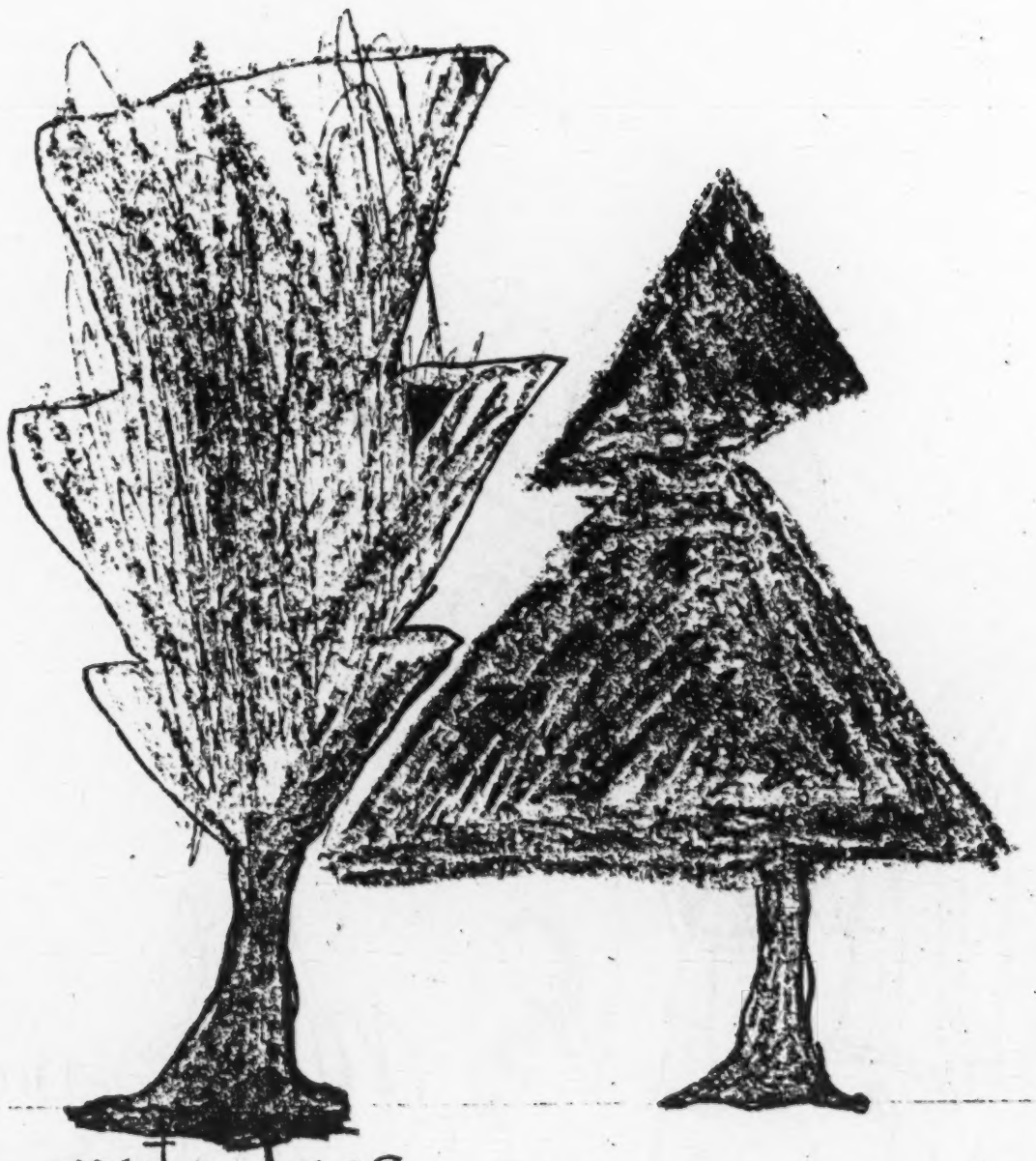
-ost the iMportants thing in the

worlD it can save Birds and Boys-

and Girls it Brings Shade and it has-

-preette loves and it Geuse us PaPer and Hu

-ses so Meney thags. that are god.

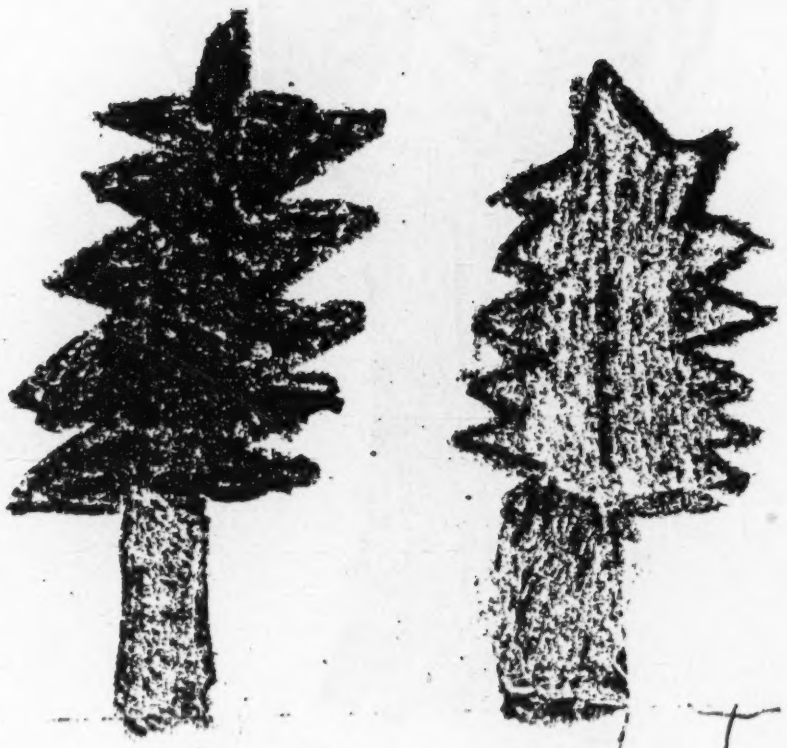


A cocanut Tree

A cocanut tree is a reagh.

When the cocanut tree is shacked the cocanut fall on your head.

Cocanuts are good to eat and good and sm elly.

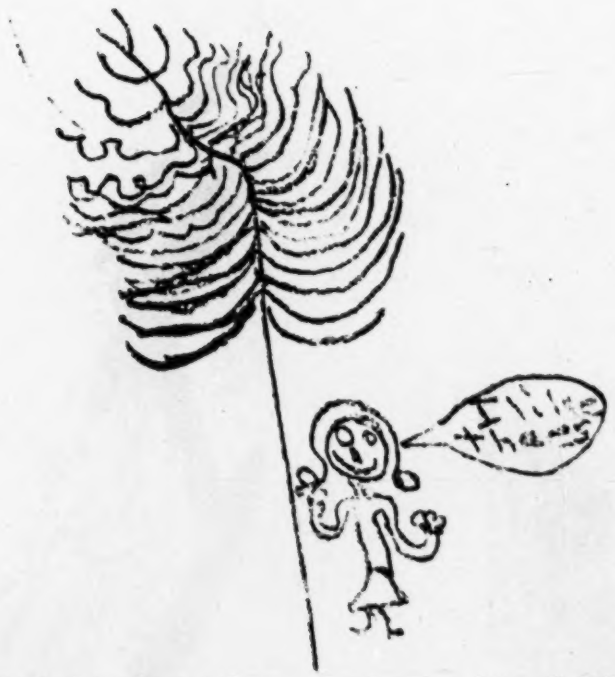


I am a tree and I am a big tree. I live in the forest with other big and little trees. My name is pine tree I am called pine tree because I have pine cones on me. My bark is very ruff too.

Belinda Brown

The Cedar tree.

The Cedar tree helps us by Shade, they work very well in Yards, footbal fields, and many other things. Trees help People.



TRees are helpful to us because they they help us to make our houses. And the paper we right on.

And also it makes our air.

And when were hot we can sit under it.

The End

By Patti latham

trees

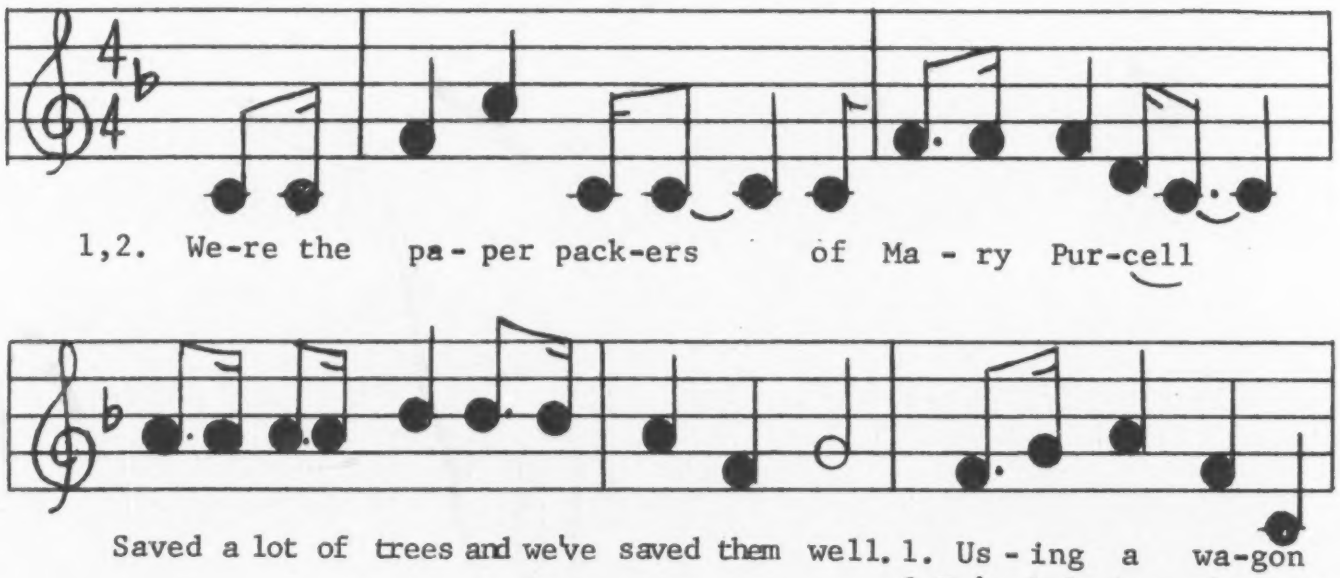
Trees are helpful ,to some people and annals. Like the Giraffe. It helps people So they could read cuase ~~It~~ makes paper. Paper is a helpful thing becuase it can help you ge~~t~~ ~~to~~ college. AND trees ~~do~~ it all

How trees help living things.

All kinds of trees help little little little bees to make their little nests up in big big trees. How trees help living things it even the birds wings. Some trees are hard and not so smooth some are rough and some are smooth. trees are all different things and they are in all different places too.

Donald Torset

THE PAPER PACKER SONG


1,2. We-re the pa - per pack-ers of Ma - ry Pur-cell
Saved a lot of trees and we've saved them well. 1. Us - ing a wa-gon
2.We're help-ing make our
1. And bi - cy-cle — sav - ing up pa-per to re - cy-cle—.
2. world a better scene —, keep - ing our for-ests cool and green —.
1,2. We're the pa-per pack-ers of Ma-ry Pur-cell—. Saved a lot of trees & we've
★Chorus (after each verse)
saved them well. Pa-per, pa - per, a hun-dred and 20 pounds to save a tree.
Pa-per, pa - per, a hun-dred and 20 pounds for me ———.

TABULATION OF WEIGHT RECEIPTS FROM GEORGIA-PACIFIC

FEBRUARY 24 THROUGH JUNE 1, 1971

Date	Type of Paper	Pounds
February 24	Newspaper	8640
March 1	Newspaper	7880
March 9	Newspaper	7880
March 17	Newspaper	8080
March 31	Newspaper	9050
April 16	Newspaper	8720
April 29	Newspaper	8820
May 17	Newspaper	6490
May 17	Cardboard	1450
May 26	Newspaper	8150
June 1	Newspaper	--